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10/797,404	03/09/2004	Johnny Mikhael Matta	6655P029X	5588

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP
1279 OAKMEAD PARKWAY
SUNNYVALE, CA 94085-4040

EXAMINER	
ADHAMI, MOHAMMAD SAJID	
ART UNIT	**PAPER NUMBER**
2416	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/797,404	MATTA ET AL.	
	Examiner	Art Unit	
	MOHAMMAD S. ADHAMI	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44,57-59 and 62* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-44,57-59, and 62* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

- Applicant's amendment filed 11/18/2008 is acknowledged.
- Claims 1,20,21,37,44,57,59, and 62 have been amended.
- Claims 45-56,60, and 61 are cancelled.
- Claims 1-44,57-59, and 62 are pending.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5,14-17,19-21,37-42,44, and 62 are rejected under 35 U.S.C. 102(e) as being anticipated by Martin (US App.2004/0146056).

Re claims 1,20,21,37,44, and 62:

Martin discloses *a queue* **(**Para.[0023] The timer packet can then be queued for transmission**)**.

Martin further discloses *probing an end-to-end path to identify addresses of all hops on the end-to-end path* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables" where each network element can be a node**)**.

Martin further discloses *generating and transmitting a pair of time-stamp request packets to at least one hop on the end-to-end path* **(**Para.[0058] Upon receipt of a timer packet, the UTS time is immediately recorded - where the time packet is a "time-stamp request packet" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop" – where the router can send multiple timer packets**)**.

Martin further discloses *generating and transmitting a time-stamp in response to the pair of time-stamp request packets* **(**Para.[0058] Upon receipt of a timer packet, the UTS time is immediately record - where the UTS time is a "time-stamp" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop" and Para.[0063] generates a data request for the time of receipt of a packet and Para.[0067] "each router can initiate its own timer packets, call for timing data from any other router(s) and update the latency information in its router table independently of the network manager or any other router" - where the timing data contains a time stamp**)**.

Martin further discloses *processing the time-stamp to produce a QoS estimate* **(**Para.[0029] the receiving switch computes and routes the latency of the relevant link**)**.

Re claim 2:

Martin discloses *a Traceroute application* **(**Para.[0049] the general route employed may be determined by existing routers**)**.

Re claim 3:

Martin discloses *the probing step to identify hops on the end-to-end path being generated from a source and/or destination node* **(**Fig.1 where the switches are "nodes" and can source and destination nodes**)**.

Re claims 4 and 38:

Martin discloses *the processing of the time-stamp being performed at the source and/or destination node* **(**Fig.1 where the switches are "nodes" and can source and destination nodes**)**.

Re claim 5:

Martin discloses *the time-stamp request packets being ICMP requests* **(**Para.[0004] "Common and long-established methods for assessing the quality of a link in an IP network involve the use of ICMP"**)**.

Re claims 14,16,17,39,41, and 42:

Martin discloses *the QoS estimating comprising a link and path capacity, a queuing delay, link and path utilization, and link and path available bandwidth* **(**Para.[0009] The capacity and transmission delay of a route will vary and Para.[0010] Link latency is used to compute variables such as maximum cell transfer delay, peak-to-peak cell delay variation, available cell rate, cell loss ratio, and the like where link and path capacity, utilization, and available bandwidth are all similar and can be found by the capacity and are reflected in the available cell rate**)**.

Re claims 15 and 40:

Martin discloses *the QoS estimate comprising queuing delay* **(**Para.[0011] "adaptive routing system in which the queue length at a router on a link is used as a proxy for the latency of that link and router tables are maintained using that data" where the queue length is related to the queuing delay**)**.

Re claim 19:

Martin discloses *restarting the probing step in the case of a change in routing tables* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables"**)**.

Re claims 57 and 59:

Martin discloses *probing an end-to-end path to identify capacity of all hops on the end-to-end path* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables" where each network element can be a node and Para.[0009] Since the capacity and transmission delay (latency) of a route will vary according to packet load and the capabilities of the links and routers in that route, router tables need constant updating**)**.

Martin further discloses *transmitting a pair of ping requests to a hop on the end-to-end path* **(**Para.[0004] "Common and long-established methods for assessing the quality of a link in an IP network involve the use of ICMP (Internet Control Message Protocol) to send echo-reply control messages between network entities" where all nodes are capable of this function and Para.[0058]

Upon receipt of a timer packet, the UTS time is immediately recorded - where the time packet is a "ping request" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop" – where the router can send multiple timer packets**)**.

Martin further discloses *receiving a ping reply in response to the pair of ping request* **(**Para.p0029 the sending switch uses its GPS clock to time-stamp selected outgoing packets and Para.[0061] When network manager or router wishes to collect latency data to up-date its router table, it can send a normal and separate management query packet to each of the routers requesting their respective receipt and transmission times for packets with IDs specified by the manager and Para.[0063] generates a data request for the time of receipt of a packet and Para.[0067] “each router can initiate its own timer packets, call for timing data from any other router(s) and update the latency information in its router table independently of the network manager or any other router" - where the timing data contains a time stamp**)**.

Martin further discloses *processing the time-stamp to produce a QoS estimate* **(**Para.[0029] the receiving switch computes and routes the latency of the relevant link**)**.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Carlson (US App.2004/0210632).

Re claims 6 and 11:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *the number of generated and processed time-stamp request packets being at least five and sending the requests after a certain delay*.

Carison discloses *the number of generated and processed time-stamp request packets being at least five and sending the requests after a certain delay* **(**Para.[0056] "ten pings are sent every sixty seconds, with each ping being separated by a one second interval"**)**.

Martin and Carison are analogous because they both pertain to identifying nodes on a path.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include generating at least five requests and transmitting them after a certain delay as taught by Carison in order to reduce congestion on the network and at the sender/receiver.

5. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Zhang (US App. 2003/0152034).

Re claims 7-10:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *generating requests to hops based on their utilization, queuing delay, queue size, processing delay, available bandwidth, or congestion status*.

Zhang discloses *generating requests to hops based on pattern of utilization, queuing delay, queue size, processing delay, available bandwidth, or congestion status* **(**Fig.3 and 4 – Fig.3 shows compiling a list of peers to probe based on QoS parameters and other criteria and Fig.4 shows sending probes to peers included on the list, therefore the probes that satisfy the QoS and other criteria are probed more frequently than those not satisfying the criteria**)**.

Martin and Zhang are analogous because they both pertain to probing nodes to determine QoS parameters.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include generating probes based on QoS parameters as taught by Zhang in order to reduce probing traffic and reduce network traffic.

6. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Arai (US 7,068,677).

Re claims 12 and 13:

As discussed above, Martin meets all the limitations of the parent claims.

Martin does not explicitly disclose *adding dummy data to a packet to increase the size of a packet in relation to the speed of a link*.

Arai discloses *adding dummy data to a packet to increase the size of a packet in relation to the speed of a link* **(**Col.5 lines 62-64 "the dummy bits I to be added are calculated to be a packet length such that the packet can be reached within the delay time" where if the link is fast, the delay time will be shorter**)**.

Martin and Arai are analogous because they both pertain to communication networks.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include adding dummy data to increase the size of a packet as taught by Arai in order to maintain a desired packet length.

7. Claims 18 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Lucidarme (US App. 2003/0040320).

Re claims 18 and 43:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *estimating interfering flows*.

Lucidarme discloses *estimating interfering flows* **(**Para.[0069] "estimation by the receiver of the signal-to-interferer ratio (SIR)"**)**.

Martin and Lucidarme are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include estimating interfering flows as taught by

Lucidarme in order to choose a path that will offer the lowest interference and a better quality of service.

8. Claim 22-32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Haas (US App. 2004/0025018).

Re claims 22,35,36:

Martin discloses *a queue* **(**Para.[0023] The timer packet can then be queued for transmission**)**.

Martin further discloses *probing an end-to-end path to identify addresses of a plurality of hops on the end-to-end path* **(**Para.[0006] "each network element must be pinged from each other element to establish and maintain a comprehensive set of routing tables"**)**.

Martin further discloses *generating and transmitting a time-stamp request packet to a hop on the end-to-end path* **(**Para.[0004] "Common and long-established methods for assessing the quality of a link in an IP network involve the use of ICMP (Internet Control Message Protocol) to send echo-reply control messages between network entities"**)**.

Martin further discloses *generating a time-stamp with the hop* **(**Para.p0029 the sending switch uses its GPS clock to time-stamp selected outgoing packets and Para.[0061] When network manager or router wishes to collect latency data to up-date its router table, it can send a normal and separate management query packet to each of the routers requesting their respective receipt and transmission times for packets with IDs specified by the manager**)**.

Martin further discloses *processing the time-stamp to produce a QoS estimate* **(**Para.[0029] the receiving switch computes and routes the latency of the relevant link**)**.

Martin further discloses *sending an origination address* **(**Para.[0022] "The coding of a packet as a timer packet with the identifying transmitter and receiver addresses"**)**.

Martin does not explicitly disclose *spoofing the origination address to that of another hop on the network*.

Haas discloses *spoofing the origination address to that of another hop on the network* **(**Para.[0095] "This allows an adversary that can spoof a data link address and lies within hop of an end-to-end data flow route"**)**.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include address spoofing as taught by Haas in order to make it difficult to trace the identity of the node sending the request.

Re claim 23:

Martin discloses *a Traceroute application* **(**Para.[0049] the general route employed may be determined by existing routers**)**.

Re claims 24 and 25:

Martin discloses *the probing step to identify hops on the end-to-end path being generated from a source and/or destination node* **(**Fig.1 where the switches are "nodes" and can source and destination nodes**)**.

Re claims 26-28:

Martin discloses *the processing of the time-stamp being performed at the source and/or destination node* **(**Fig.1 where the switches are "nodes" and can source and destination nodes**)**.

Re claims 29,31,32, and 34:

Martin discloses *the QoS estimating comprising a link and path capacity, link and path utilization, link and path available bandwidth, and a propagation delay* **(**Para.[0009] The capacity and transmission delay of a route will vary and Para.[0010] Link latency is used to compute variables such as maximum cell transfer delay, peak-to-peak cell delay variation, available cell rate, cell loss ratio, and the like where link and path capacity, utilization, and available bandwidth are all similar and can be found by the capacity and are reflected in the available cell rate**)**.

Re claim 30:

Martin discloses *the QoS estimate comprising queuing delay* **(**Para.[0011] "adaptive routing system in which the queue length at a router on a link is used as a proxy for the latency of that link and router tables are maintained using that data" where the queue length is related to the queuing delay**)**.

9. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Haas as applied to claim 22 above, and further in view of Lucidarme.

Re claim 33:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *estimating interfering flows*.

Lucidarme discloses *estimating interfering flows* **(**Para.[0069] "estimation by the receiver of the signal-to-interferer ratio (SIR)"**)**.

Martin and Lucidarme are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to include estimating interfering flows as taught by Lucidarme in order to choose a path that will offer the lowest interference and a better quality of service.

1. Claim 58 is rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Jewett (US App. 2007/0233946).

Re claim 58:

As discussed above, Martin meets all the limitations of the parent claim.

Martin does not explicitly disclose *a 802.11 wireless local area network*.

Jewett discloses *a 802.11 wireless local area network* **(**Para.[0029] the network may be a wireless LAN 802.11**)**.

Martin and Jewett are analogous because they both pertain to data transmission.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Martin to use a 802.11 network as taught by Jewett in order to use a well-known standard for communication.

Response to Arguments

2. Applicant's arguments filed 11/18/2008 have been fully considered but they are not persuasive.

In the remarks, Applicant contends Martin fails to teach or suggest a pair of time-stamp request packets.

The Examiner respectfully disagrees. Martin does disclose a pair of time-stamp request packets **(**Para.[0058] Upon receipt of a timer packet, the UTS time is immediately recorded - where the time packet is a "time-stamp request packet" and Para.[0060] "any router may send a timer packet to any other router to which it is connected by a single hop"**)**. The router may send multiple timer packets and therefore the limitation of generating a pair of time stamp request packets is met.

In the remarks, Applicant contends Haas teaches spoofing in relation to a malicious route error message instead of the time stamp request packet, and that the injection of a malicious route error message does not include "an origination address of the origination node spoofed to that of another hop on the network".

The Examiner respectfully disagrees. The Examiner does not see the relevance of Haas's spoofing being in relation to a malicious route error message. Haas discloses spoofing the origination address to that of another hop on the network **(**Para.[0095]**)**, which reads on the claim limitation. In response to applicant's argument that the references fail to show certain features of

applicant's invention, it is noted that the features upon which applicant relies (i.e., a message including an origination address of the origination node spoofed to that of another hop on the network) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MOHAMMAD S. ADHAMI whose telephone number is (571)272-8615. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (571)272-3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mohammad S Adhami/
Examiner, Art Unit 2416

/Chi H Pham/
Supervisory Patent Examiner, Art Unit 2416